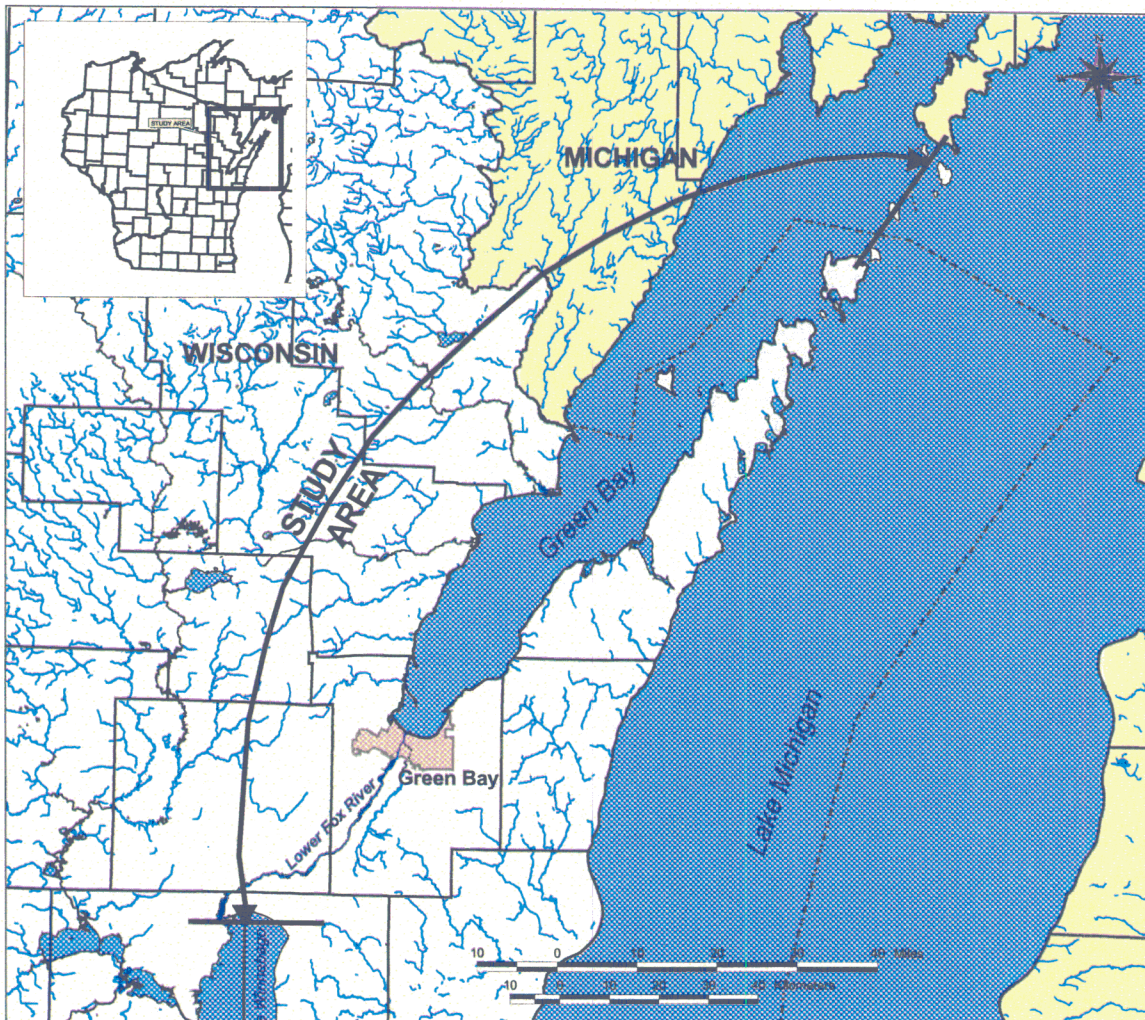


Reconnaissance Study Section 905(b) (WRDA 86) Analysis

Lower Fox River , Wisconsin and
Green Bay, Wisconsin and Michigan
Environmental Dredging



U.S. Army Corps of Engineers
Detroit District

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**Reconnaissance Study
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Environmental Dredging
Lower Fox River and Green Bay, Wisconsin**

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1. Study Authority

This expedited reconnaissance study is being conducted under the authority of Section 905(b) of the Water Resources Development Act (WRDA) of 1986.

Funds in the amount of \$100,000 were appropriated in Fiscal Year 2000 to conduct the study.

2. Study Purpose

The purpose of this study is to determine if there is a Federal interest through the programs of the U.S. Army Corps of Engineers (USACE) in providing environmental/ecosystem restoration in the Lower Fox River and Green Bay, Wisconsin. This reconnaissance phase of the study has resulted in the finding that there is a Federal interest in continuing the study into the feasibility phase. The purpose of this Section 905(b) (WRDA) Analysis is to document the basis for this finding and to establish the scope of the feasibility phase. As the document that establishes the scope of the feasibility study, this report is also used as the Scope of Work chapter of the Project Management Plan.

3. Location of Study, Non-Federal Sponsor and Congressional Districts

The project study area for this Reconnaissance Study includes the Lower Fox River and Green Bay aquatic systems (Figure 1). The Lower Fox River is located in northeastern Wisconsin within the eastern ridges and lowlands of the state. The Lower Fox River is defined as the 39-mile portion of the Fox River, beginning at the outlet of Lake Winnebago and terminating at the mouth of the river into Green Bay, Lake Michigan. The river flows north and drains approximately 6,330 square miles (USGS, 1998), making it a primary tributary to Green Bay and a part of the Great Lakes system. Green Bay is a freshwater system approximately 120 miles long, which drains into Lake Michigan, and is located on the state border between Wisconsin and Michigan along a northeast- to southwest-trending axis.

Historic discharges from municipal, industrial, and agricultural sources in the Lower Fox River region have degraded sediment and water quality and adversely impacted the ecology of the river and bay. Of the several toxic substances found, polychlorinated biphenyls (PCBs) in river sediments are the primary chemical of concern (COC). Furthermore, addressing the sediments containing PCBs will also address the other COCs found in the sediments. PCB-contaminated sediments in the Lower Fox River and Green Bay pose a potential threat to fish, wildlife, and human health. The principal source of this risk is bioaccumulation and biomagnification of PCBs from the sediments into fish, and into people, birds, and animals that eat those fish.

The non-Federal sponsor for the feasibility phase of the study will be the Wisconsin Department of Natural Resources (WDNR). The WDNR through funding and technical assistance from the U.S. Environmental Protection Agency (USEPA) prepared a draft Remedial Investigation/Feasibility Study (draft RI/FS) in accordance with CERCLA for the Lower Fox River. This draft RI/FS was released to the public for comment in February of 1999. The WDNR is in the process of revising this RI/FS and expanding it to include the bay of Green Bay. The RI/FS develops remedial alternatives for management of contaminated sediments in the study area. The WDNR and EPA will attempt to negotiate a consent agreement for cleanup efforts and damages with the principal responsible parties (PRPs) under which the PRPs will implement the remedial alternative.

The study lies within the 8th and 6th U.S. Congressional Districts of Wisconsin represented by Congressmen Mark Green and Thomas Petri, respectively. A portion of Green Bay also lies within the 1st U.S. Congressional District of Michigan represented by Congressman Bart Stupak.

4. Prior Reports and Existing Projects

The Detroit District performs maintenance dredging on the Lower Fox River and Green Bay as part of a Federal Navigation Project. The Corps of Engineers has been actively dredging the Lower Fox River for the last 149 years. The Detroit District currently performs maintenance dredging on the Lower Fox River and Green Bay as part of a Federal Navigation project. Prior to 1968, material dredged downstream of DePere dam was side-cast outside the navigation channel or dumped in deeper waters of Green Bay. By 1967, the Bayport Confined Disposal Facility (CDF) was complete and a second CDF, Renard Island, was in operation by 1978. These two CDFs have been the primary disposal sites used by the Corps in the last 30 years. The Renard Island CDF (Kidney Island) is now closed.

Numerous studies, investigations, and reports concerning the Lower Fox River and Green Bay PCB sediment contamination issue have been conducted and are available through the Internet. The following four web sites contain most of this information or links to other sites with related information:

- <http://www.dnr.state.wi.us/org/water/wm/lowerfox>
- <http://epa.gov/region5/foxriver>
- <http://www.fws.gov/r3pao/nrda>
- <http://www.foxrivergroup.org>

Most notable of the reports are the following:

- *Draft Feasibility Study, Lower Fox River, Wisconsin*, released in February 1999 by the WDNR. This document presents the WDNR's Draft Feasibility Study Report (FS) to evaluate potential remedial

alternatives and develop the necessary supporting information for the selection of a sediment remediation alternative for the Lower Fox River. The FS Report is the final documentation of the remedial investigation and feasibility study (RI/FS) process. Major components of the RI/FS process that contributed to the completion of the draft FS Report include the following:

Data Management (DM). DM involved the development of a usable database produced through the identification, acquisition, review (validation), catalog, classification, and archive of known available data sources (electronic and hard copy) pertinent to the Lower Fox River/Green Bay Risk Assessment (RA) and draft RI/FS. Usable data includes water, sediment, and fish tissue chemistry data. DM procedures and results are provided in the document; *Data Management Summary Report* produced by EcoChem, Inc. (EcoChem and RETEC, 1998).

Remedial Investigation (RI). The RI provides a compilation, review, and organization of physical, chemical, and biological characteristics of the Lower Fox River and Green Bay. These characteristics provide the framework for a site conceptual model describing the magnitude and extent of chemicals of concern (COCs) in both sediment and water and the valued biological resources within the Lower Fox River and Green Bay. Parameters such as geology, surface water hydrology, sedimentation, chemical distribution, and fish/bird habitats are presented in the document; *Draft Remedial Investigation for the Lower Fox River* (RI Report) (Natural Resources Technology and RETEC, 1999).

Risk Assessment (RA). The RA involved the identification of COCs and risk-based sediment cleanup goals based upon realistic assessments of potential risks to ecological and human receptors. The RA provides an assessment of risks to human health and the environment that will support selection of a remedy to eliminate, reduce, or control those risks. The RA is presented in two documents; *Screening Level Human Health and Ecological Risk Assessment* (SLRA) (RETEC, 1998) and *Draft Baseline Human Health and Ecological Risk Assessment* (BLRA) (RETEC, 1999).

- *Restoration and Compensation Determination Plan (RCDP), Lower Fox River/Green Bay, Natural Resource Damage Assessment*, October 25, 2000, USFWS. This report is the most recent phase in a series of investigations and reports by the USFWS and other natural resources trustees for assessing the natural resource damages (NRDA) that have resulted from releases of PCBs in the Lower Fox River and Green Bay.
- *The Great Lakes Water Quality Agreement (GLWQA)* initiative under the auspices of the International Joint Commission (IJC) is also underway to address ecosystem restoration in the region. The purpose of the GLWQA is to restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem. The GLWQA designated 43 Areas of Concern (AOC) around the Great Lakes where beneficial uses of lakes and tributaries are impaired. As part of the

agreement, the U.S. and Canada committed to cooperating with State and Provincial governments in the development and implementation of plans to restore the beneficial uses in the AOC. The Lower Fox River and Lower Green Bay is an AOC.

5. Plan Formulation

a. National Objectives

The national objective of water and related land resources planning is to contribute to national economic development (NED) consistent with protecting the nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements. Additionally, the national objective concerning the protection, restoration, conservation and management of ecological resources is provided through numerous Federal laws, executive orders and treaties promulgated in recent decades. These provisions include compliance requirements and emphasize protecting environmental quality. They also endorse Federal efforts to advance environmental goals, and a number of these general statements declare it national policy that full consideration be given to the opportunities which projects afford to ecological resources. Contributions of ecosystem restoration to the nation's ecosystems are to be measured by changes in the amounts and values of habitat. Recent water resources authorizations have enhanced opportunities for Corps involvement in studies and projects to specifically address objectives related to the restoration of ecological resources. Specific authorities for new individual studies and projects to restore ecological resources have also been provided in legislation. Examples of legislation that broadly support Federal involvement in the restoration and protection of ecological resources are as follows:

- Fish and Wildlife Coordination Act of 1958, as amended
- Federal Water Project Recreation Act of 1965, as amended
- National Environmental Policy Act of 1969, as amended
- Coastal Zone Management Act of 1972, as amended
- Water Pollution Control Act of 1972, as amended
- Endangered Species Act of 1973, as amended
- Water Resource Development Acts of 1986, 1988, 1990, 1992, 1996

b. Public Concerns

Public concern in the study area and the Great Lakes Region has been, and continues to be, high and controversial concerning PCB-sediment contamination, the impacts of PCBs, and the method of PCB cleanup. There is consensus that significant amounts of PCBs were discharged to the Lower Fox River

and that there is a significant mass of PCBs in the sediments present in the Lower Fox River and Green Bay. Most people also agree that these contaminants have been and are entering the food chain and that they pose a threat to fish and wildlife viability, and to human health. However, there is not agreement on the level of remediation, if any, that is necessary. Some parties favor recovery through ongoing naturally occurring, physical, chemical or biological processes while other parties favor a more aggressive remedial alternative, such as capping or dredging, that will reduce the risk from PCB exposure more quickly.

Federal, State, Local, and Tribal governments have conducted studies and produced reports showing the need for cleanup and for the restoration of damaged resources in order to protect public health, to avoid further adverse affects to fish and wildlife, and to restore and compensate for natural resources damages that have already occurred. Fish consumption advisories have been in effect on the Fox River since 1976. The BLRA shows that PCBs in the river pose a significant risk to various ecological endpoints and to human health.

Several local conservation and environmental enhancement groups also believe that efforts are needed in the Fox River Watershed to reduce land erosion and resultant phosphorus and other nutrient input to the Fox River and Green Bay. They also believe that there are many enhancement opportunities within the Fox River and Green Bay for island creation and shoreline and bottom shaping to benefit fish and wildlife habitat.

c. Problems and Opportunities

1) Problems

(a) Existing Conditions

Watershed. The Lower Fox River and the Green Bay Systems are depicted on Figures 1 and 2. Located in northeastern Wisconsin, the Lower Fox River is a 39-mile reach of the Fox River that flows north from the outlet of Lake Winnebago to the mouth of the river into Green Bay. The drop in river elevation in the Lower Fox River is approximately 168 feet. Estimates of the drainage basin range from 6,330 to 6,641 square miles of land surface, with a mean discharge of 4,300 cubic feet per second (cfs). The Lower Fox River is impounded by a series of locks and dams, some of which still function for navigation.

Green Bay is 119 miles in length and an average of 23 miles in width, located on the state border between Wisconsin and Michigan. The Green Bay watershed drains approximately 15,625 square miles—about one-third of the Lake Michigan drainage basin. Approximately two-thirds of the Green Bay watershed is in Wisconsin and the remaining one-third is in Michigan.

The Lower Fox River contributes 42 percent of the total drainage to Green Bay, 70 percent of the suspended sediments, and over 95 percent of the PCBs.

Study Area. For assessment of contaminated sediments in the draft RI/FS, the Lower Fox River was divided into four reaches based on similar physical characteristics, contaminant concentrations, and dam/lock structures (Figure 2):

- Little Lake Butte des Morts Reach
- Appleton to Little Rapids Reach
- Little Rapids to De Pere Reach
- De Pere to Green Bay Reach

While not part of the WDNR's 1999 draft FS, for modeling purposes, Green Bay and the last reach of the Fox River have been divided into six morphometric zones for mass balance modeling developed as part of the Green Bay Mass Balance Study. Because of the counterclockwise circulation in the bay, sediment deposition from the Fox River is primarily in the lower and eastern side of the bay.

(b) Identified Problems

The following paragraphs in this section present a composite of statements and numerical ranges of risk impacts that were taken from several local, state, and federal sources. These statements and numerical ranges were derived from different studies or interpretations of studies, and the results are not necessarily agreed to by all parties. They are not intended to foster debate but rather, they serve to illustrate the extent and complexity of the sediment contamination problem for a reconnaissance phase study.

The primary problem is PCB-contaminated sediments in the Lower Fox River and Green Bay which contribute great risk to fish, wildlife, and human health. The principal source of this risk is bioaccumulation and biomagnification of PCBs from the sediments into fish, and into people, birds, and animals that eat those fish.

Impacts to key fish and wildlife species have been documented by the U.S. Fish and Wildlife Service. Twenty-five percent of walleyes have abnormalities, a small percentage of cormorants have crossed bills, the reproduction rates for Forster's terns and Bald Eagles are 50 percent less than background, and mink have higher-than-desirable PCB concentrations in their tissue. Reproductive impairments in birds linked to PCBs include: increased incubation periods, reduced hatchability, egg mortality, and chick deformities. PCB concentration in bird eggs from nests near Green Bay and the Lower Fox River were four to five times greater than PCB concentrations in eggs from birds in control areas.

Eating fish caught in the river and bay is the main way that PCBs can affect people's health. Cancer risks from eating fish or birds in the area are 100 to 1,000 times higher than thresholds set to protect public health. Noncancer risks (such as neurological impacts to infants and children)

for people who eat contaminated fish is 10 to 150 times higher than health thresholds. This makes the Fox River/Green Bay site one of the highest risk sites in the region. While fish consumption advisories have been in place since 1976, from 2,000 to 5,000 anglers, mainly ethnic Hmong and Native Americans, continue subsistence consumption of fish and are at the most risk.

Ecological risk assessments completed for the Lower Fox River and Green Bay focused on environmental values to be protected and included the following categories:

- Functioning water column invertebrate communities (phytoplankton and zooplankton)
- Functioning benthic invertebrate communities (mussels, insects, worms)
- Benthic fish reproduction and survival (carp)
- Pelagic fish reproduction and survival (shiner, walleye, perch)
- Insectivorous bird reproduction and survival (swallows)
- Piscivorous bird reproduction and survival (cormorants and terns)
- Omnivorous bird reproduction and survival (eagles)
- Piscivorous mammal reproduction and survival (mink)

Exposure of the receptor species in each assessment category to PCB contaminants was evaluated and risks were calculated by comparison of exposure to toxicity via a hazard quotient. Hazard quotients that exceed 1.0 indicate risks. The assessment indicates that PCBs pose risk to multiple receptors at all trophic levels throughout the Lower Fox River and Green Bay. Hazard quotients for those receptors at risk ranged from 1.1 to 1,453. This includes impacts to benthic invertebrates, impairment of reproduction in benthic and pelagic fish, embryonic deformities in piscivorous birds, and impacts to reproduction and survival of piscivorous mammals. Only insectivorous birds and water column invertebrate receptors were considered not at risk.

A Remedial Action Plan (RAP) was developed for the Lower Green Bay and Fox River Area of Concern (AOC). The AOC consists of the lower 7 miles of the Fox River below De Pere Dam and a 21-square-mile area of lower Green Bay, out to Point au Sable and Long Tail Point. Fishing, boating, swimming, hunting and passive recreation have been restricted. Fish reproduction and fish-eating bird reproduction are impaired. Consumption advisories warn against eating mallard ducks and fish of 12 species. WDNR issued fish and waterfowl consumption advisories in 1976 and 1987, respectively; and Michigan issued fish consumption advisories for Green Bay in 1977. Most of these advisories are still in place. Of the ten use impairments documented in the RAP, the following seven use impairments are directly attributable to bioaccumulation and biomagnification of PCBs from the sediments up through the food chain:

- Restrictions on Fish and Wildlife Consumption
- Degraded Fish and Wildlife Populations
- Bird or Animal Deformities or Reproductive Problems
- Degradation of Benthos
- Restrictions on Dredging Activities
- Restrictions on Drinking Water Consumption or Taste and Odor Problems
- Degradation of Phytoplankton and Zooplankton Populations

Populations of waterfowl, furbearers, and endangered colonial-nesting birds have declined—fish reproduction and fish-eating bird reproduction are impaired. There has been habitat loss for waterfowl because of a decline in food supply, such as wild celery, fingernail clams, and snails, caused by degradation of the benthos. “PCB-like compounds” are suspected of causing most of the known reproductive problems in the fish-eating Forster’s tern.

The 1993 RAP update reconfirms the goals of the 1988 plan, with added emphasis on increased biodiversity as a goal. The U.S. EPA’s web site for the Green Bay and Lower Fox River AOC (<http://www.epa.gov/glnpo/aoc/greenbay.html>) describes actions that have been taken to reduce the use impairments, which includes nonpoint source management, pollution prevention, and public awareness and education.

Threatened or Endangered Species. Several species listed as endangered or threatened under state and/or federal regulations occur within the area. Three species of endangered or threatened fish are suspected to inhabit the area. These include the State-listed threatened longear sunfish and greater redhorse, and the State endangered striped shiner. State-listed threatened bird species include the great egret, osprey, and red-shouldered hawk. The bald eagle, which is on the federal threatened species list but which is delisted in Wisconsin, may also occur within the assessment area. State-listed endangered bird species occurring within the assessment area include the Caspian tern, common tern, Forster’s tern, peregrine falcon, and snowy egret. Of these, only the peregrine falcon is on the federal endangered species list, and has recently been proposed for delisting. There are no documented occurrences of threatened or endangered amphibian species within the area. The only two protected reptile species suspected to occur in the area are Blanding’s turtles, which are present in most of Wisconsin, and wood turtles, which are found in Brown and Oconto counties. Neither of these State-listed species is on the federal endangered or threatened species list. Insufficient information has been found to determine if endangered or threatened mussels, snails, or insects occur in the assessment area. There is no current information relating PCB discharge to injury of plant species listed as threatened or endangered in State regulations.

Contaminants—Types and Sources. As many as 360 different chemicals have been found in the water, sediments, fish, and wildlife of the Lower Fox River and Green Bay. These chemicals include PCBs, dioxins, furans, mercury, ammonia, DDT, and other pesticides. The Lower Fox River contributes more PCBs to Green Bay and Lake Michigan than any other source (WDNR, PUB-CE-255).

PCBs are stable, man-made compounds. They absorb heat and do not easily break down. Because of these properties, they have been widely used in electrical equipment, hydraulic fluids, fire retardants, and many other commercial and industrial processes. In the Fox River Valley, PCBs were used in the manufacturing and recycling of carbonless copy paper. As a result, PCBs were released to the river in wastewater discharges.

The manufacture and use of PCBs ended in the early 1970s. However, estimates show that more than 98 percent of the PCBs were discharged to the river before this time. Many of these PCBs settled in the river's bottom. Active discharges from industry and wastewater treatment plants to the Lower Fox River were virtually eliminated in the early 1980s.

An estimated 63,000 pounds of the PCBs previously discharged remain in the Lower Fox River. Most of them are downstream of the De Pere dam. An even larger quantity has passed through the Lower Fox River to Green Bay, Lake Michigan, and beyond. Results of the intensive "Mass Balance" study conducted by the DNR and EPA in 1989 showed that about 160,000 pounds of PCBs have already found their way into Green Bay from the Lower Fox. It also showed that about 620 pounds of PCBs enter the bay from the river each year.

Using information from the Green Bay Mass Balance Study, 35 individual contaminated sediment deposits in the Lower Fox River between Lake Winnebago and De Pere were identified. Sediments in these deposits have an estimated total volume around 2 million cubic yards and contain about 8,600 pounds of PCBs. From the De Pere dam downstream to the mouth of the river at Green Bay, there is a continuous layer of contaminated sediment. This large deposit has an estimated volume of 8 million cubic yards and contains around 55,000 pounds of PCBs.

PCBs from the sediments continue to enter the food chain of the river because of the activities of small plants and animals and erosion of sediments by the river's current.

(c) Future Conditions

Time trend analysis of PCBs in sediments has shown that there is a gradual decline in PCB concentrations in the upper few inches of sediments in the Lower Fox River. Time trend analysis of PCBs in fish tissue indicated steady declines in fish tissue PCB concentrations from the 1970s, but a slowing of the decline occurred around 1980. After the "breakpoint" of 1980, declines were relatively low (1999 RI and RA, and WDNR 1997 modeling).

Without cleanup efforts, PCB contamination and the spread of PCBs and the impacts of PCBs on fish, wildlife, and humans will continue. A ‘no action’ or natural recovery approach could take 100 years or longer to reach satisfactory PCB sediment quality thresholds (SQTs). Sediment quality thresholds (SQTs) have been developed for the study area (reference 99 BLRA). A SQT is a risk-based cleanup level protective of the ecological receptor for which the SQT was developed. Much of this recovery would be the result of further dispersal of PCBs into Green Bay and Lake Michigan. Meanwhile fish, wildlife, and humans would continue to be exposed to higher-than-acceptable levels of PCBs and they would continue to suffer the effects of these elevated levels.

Removal or containment of contaminated sediments to low concentration levels would allow acceptable PCB sediment quality thresholds to be reached for all receptors (except mink and benthos in some reaches) in about a 20-year time period according to the WDNR, 1999 draft FS. This would progressively alleviate impacts to affected fish and wildlife receptors and is projected to result in lifting of fish and waterfowl consumption advisories for humans by the end of the timeframe.

The change in ecological indicators between “without project” and “with project conditions” are the ecosystem restoration benefits achieved. Reducing adverse effects to fish and wildlife from 100 years to within about 20 years is a significant benefit. Furthermore, removal of the contaminants will prevent further dispersal of these PCBs into the Great Lakes system, which helps to meet established IJC goals and objectives for reduction in PCB contaminant levels.

2) Opportunities

Removal of contaminated sediments in the Lower Fox River will positively affect seven of the use impairments documented in the RAP. Reduced PCB concentrations in the sediment will lead to:

- Reduced PCB concentrations in fish and therefore fewer restrictions on fish and wildlife consumption
- Reduced reproductive problems and deformities in fish and wildlife
- Improved benthic invertebrate communities, which provide food to fish and wildlife
- Fewer restrictions on dredging activities
- Fewer restrictions on drinking water consumption

Removal or isolation of contaminated sediments would result in the following ecosystem benefits:

- Reduction in the bioavailability of contaminants to the biota of the Fox River, Green Bay, and associated Great Lakes system would lead to improved water quality and to improved conditions to affected fish and wildlife receptors.
- The original major sources of PCBs to the Fox River are either gone or controls appear to be in place. Therefore, removal of existing contaminated sediments should lead to a long-term improvement in the ecological integrity of the Fox River and Green Bay.

d. Planning Objectives

The draft RI/FS for the Lower Fox River developed by the WDNR in cooperation with the USEPA identified Remedial Action Objectives (RAOs) in accordance with CERCLA rules and guidance. RAOs are general cleanup objectives designed to protect the environment and human health. The five RAOs for the Lower Fox River and Green Bay are as follows:

- RAO1: Achieve, to the extent practicable, surface water quality ARARs (Applicable or Relevant and Appropriate Requirements) and TBCs (To-Be-Considered: other laws, rules or regulations that are not ARARs) throughout the Lower Fox River and Green Bay.
- RAO2: Protect humans who consume aquatic organisms from exposure to COCs (chemicals of concern) that exceed protective levels.
- RAO3: Protect ecological receptors from exposure to COCs above protective levels.
- RAO4: Reduce, to the extent practicable, transport of PCBs from the Lower Fox River and Green Bay to Lake Michigan.
- RAO5: Minimize containment releases during any active remediation.

Studies have shown that PCB-contaminated sediments in the study area cause adverse affects to multiple ecological receptors and have the potential to effect human health. The principal source of these adverse affects is the bioaccumulation and biomagnification of PCBs from the sediments into fish, and into people, birds, and animals that eat those fish. Therefore, removal, treatment or containment of contaminated sediments to prevent exposure pathways to insects and other organisms that live in the sediments and form the base of the food chain is the primary means of achieving ecosystem restoration goals and water quality improvements. Accordingly, the RAOs presented above, and particularly RAO1 and RAO3, which were developed collaboratively by the WDNR, Federal agencies, and Tribal representatives, also form the overall primary planning objectives for this reconnaissance investigation. More specific planning objectives are:

- (1) To restore the Lower Fox River and Green Bay ecosystem where it has been damaged by contaminated sediments.

- (2) To reduce impairments of beneficial uses, by removing and remediating contaminated sediments in the Lower Fox River and Green Bay and thereby achieve the following benefits:
- Reduce PCB concentrations in fish and, therefore, improve and restore the ecological structure
 - Reduce reproductive problems and deformities in fish and wildlife
 - Improve benthic invertebrate communities, which provide food to fish and wildlife
 - Fewer restrictions on dredging activities
 - Improve water quality
- (3) To identify alternative remediation plans that will maximize environmental benefits and minimize costs.

e. Planning Constraints

In June 1997, EPA announced its intent to list the 39-mile reach of the Lower Fox River on its Superfund list of high-priority environmental sites. The State of Wisconsin objected to this action expressing their desire to work with the PRPs in reaching a mutually agreeable plan for remediation without the formal procedures prescribed under CERCLA for National Priorities Listed (NPL) sites. Because of the WDNR's wealth of experience on the Fox River, EPA awarded a grant to the WDNR for completion of an RI/FS which will form the basis for the record of decision (ROD) to be issued jointly by the EPA and WDNR for remediation of the site. The ROD is expected to be issued by the end of 2001 or early in calendar year 2002. Following issuance of the ROD, negotiations will take place with the seven PRPs to cover implementation of remediation. EPA has said if negotiations are not successful, then the site may be placed on the NPL and then EPA may proceed under CERCLA authorities.

General Corps policy for use of the Section 312 authority is currently being revised to allow its application under certain conditions even for CERCLA contaminated sites in the context of a comprehensive restoration plan, which does not relieve State-designated PRPs from their responsibilities. This policy will allow the Corps to participate in this environmental cleanup effort regardless of its designation as a NPL site, provided there are justified environmental enhancement benefits in the Federal interest and a willing non-Federal cost-sharing sponsor.

In addition to CERCLA, there are numerous other Federal and State acts and standards that must be considered in the development of a cleanup plan. These requirements consist of national, State, and local applicable or relevant and appropriate requirements (ARARs) that must be complied with as well as other important laws, regulations and guidance that are to-be-considered (TBCs). A listing of these is contained in the WDNR's draft FS document.

f. Measures to Address Identified Planning Objectives

There is a range of approaches and technologies available to address contaminated sediments. A listing of categories of potential approaches, the associated general technologies, and the specific options for implementation are displayed in Table 1. Only the more promising and demonstrated technologies are shown. There are a number of general technologies, such as in-situ biological or chemical treatment, that are not included in the table because they are ineffective, not demonstrated, or have significant implementation problems. The technologies and options retained in Table 1 are potentially viable approaches to managing contaminated sediment. The feasibility study will identify the most cost-effective combination technologies to accomplish the project objectives.

Table 1. Potential Actions for Addressing Contaminated Sediment

Category	General Technology	Specific Option
No Action / Monitored Natural Recovery	None / Continued long-term monitoring with continued institutional control technologies	Applicable in certain locations where processes such as dispersion, burial, and natural degradation/dechlorination may occur
Institutional Controls	Physical, Engineering or Legislative Restrictions	Consumption Advisories Access Restriction Dredging Moratorium
Containment	Capping	Sand Cap Armored Cap Composite Cap
Removal	Dredging	Hydraulic Dredging Mechanical Dredging
<i>Ex Situ</i> Treatment	Thermal	High Temperature Thermal Desorption Incineration Vitrification
Dewatering	Mechanical	Centrifugation Belt Press Hydrocyclone Diaphragm Filter Press
	Gravity	On-Barge Dewatering Lagoons/Ponds Solidification
Disposal	In-River Disposal	Level Bottom Cap (relocate sediment and cap) Confined Disposal Facility (CDF)
	On-Land Disposal	Dedicated New Upland Landfill Existing Landfill (county, private, or industrial) Upland Confined Fill
		TSCA Subtitle C Landfill (for PCB concentrations over 500 mg/kg)

In addition to the categories in Table 1, implementation strategies will be evaluated in the feasibility study. These will include phasing the implementation of the actions. The basis for the sequencing may be contaminant concentrations, preferred season for work in certain locations, upstream-to-downstream

progression, prioritizing areas where contaminant sources to the river have already been removed, budget constraints, or other logical systems. Phased implementation does not materially retard the ecological benefits from the project, as ecological recovery has a natural delay associated with it, and environmental benefits accumulate incrementally. However, phased implementation must be sequenced to minimize the potential for movement of contaminated upstream sediments to re-contaminate areas already restored downstream.

g. Preliminary Plans

The WDNR's risk assessment examined levels of PCBs in sediments that posed varying risks to ecological receptors. As discussed before, these levels or concentrations are called sediment quality thresholds (SQTs). To evaluate cleanup technologies and alternatives in their draft feasibility study for the Fox River, the WDNR proposed to cleanup PCBs in river sediments until concentrations measured or averaged 250 ppb. This level would protect ecological receptors to reasonably acceptable risk levels.

The WDNR formulated plans for each Fox River reach using the various measures or combinations of measures described in the previous section. They also considered two different methods of cleanup to achieve the lowest threshold level of 250 ppm. One was to remove or contain **all** contaminated sediments above the 250-ppm level. The other was to use a surface-weighted average concentration (SWAC) approach. The SWAC is the average concentration of PCBs in the sediment at the surface. The SWAC is computed by summing the concentrations over the river reach and dividing by the surface area of the river reach. Using the SWAC approach, after implementing the alternative, some sediment concentrations at the surface will exceed the 250-ppm threshold and some will be below it.

Remedial actions which remove or isolate sediments at higher action levels (SWAC approach) may be acceptable if natural processes can be relied upon to reduce sediment PCB concentrations to protective levels in a reasonable timeframe. Deposition of cleaner sediment in the excavated areas as well as other natural recovery processes would then lower the SWAC further in the years following sediment removal. These natural recovery processes will result in a remedy that, over time, may be protective of the environment.

Preliminary plans that offer a range of approaches for addressing the contaminated sediment and for achieving the environmental benefits and planning objectives described above were developed in the WDNR draft RI/FS, and are briefly summarized here. Green Bay was not included in the WDNR's draft FS although it is currently under consideration and will be included in the revised/final FS. This document will provide valuable and additional information for the Corps' feasibility study.

The general remedial alternatives presented in the WDNR draft RI/FS are:

- No Action
- Dredge and Offsite Disposal

- Dredge and Place in a Confined Disposal Facility (CDF)
- Dredge and High Temperature Thermal Desorption (HTTD)
- In-Situ Capping

The details of how each of these alternatives is applied to the Fox River reaches are presented in the WDNR draft RI/FS. A brief generic description of each is provided here, including matters common to several alternatives.

Evaluation of the No Action alternative is required for consistency with the National Contingency Plan. This alternative is the baseline for comparison with other alternatives. Under the No Action alternative, the degraded benthic communities, impaired aquatic plants, and fish consumption advisories described earlier in the Existing Conditions section will persist, and there is no expectation that remedial action objectives will be achieved within a defined timeframe. The adverse environmental and ecosystem consequences will continue without mitigation. This remedy relies on the natural processes of erosion and sedimentation to remove and cover contaminated sediments. This process can be expected to extend over many decades. Ecological resources may suffer periods of degrading conditions as well as periods of improving conditions, because sediments contaminated at levels in excess of acceptable thresholds remain in the ecosystem.

Dredge and Offsite Disposal involves removal of the sediment from the Fox River, dewatering, and placement in an upland landfill. Dredging and dewatering technologies are available to suit the conditions likely to be found in the Fox River sediments. Both passive and mechanical dewatering were evaluated. Sediment management includes dewatering the sediment, treating the dewatering water, and discharging treated water back to the river or bay. The dewatering costs assume that water treatment consists of flocculation, clarification, and sand filtration. No other treatment of the water was assumed. Costs for water treatment can increase significantly if additional treatment processes, such as activated carbon filtration, are needed to meet discharge water quality requirements. Consequently, participation by the state in water management decisions will be of great importance.

For upland disposal, the WDNR draft RI/FS cost estimate used existing landfills or assumed development of a new landfill, depending on availability of sites for a new landfill and whether nearby existing landfills have sufficient capacity for the dredged material. All landfills would meet Wisconsin's requirements in NR 500 WAC. The potential locations for a new facility (if needed) will be identified during the feasibility study in coordination with County waste management personnel. In the event upland disposal is the preferred option, landfills in the area near the Fox River will be contacted during the feasibility study to confirm their potential capacity and tipping fees, and to identify potential practicability issues with using their facility. Other possibilities for sediment disposal in upland areas may be evaluated during the feasibility study. These include use as landfill cover material (daily cover or subgrade for final cover) or as fill beneath a cover or cap, if candidate sites are available. In general, these uses could be considered for lightly contaminated sediments only.

Dredge and Place in a CDF involves removal of the sediment from the Fox River, and placement in a CDF for dewatering and disposal. CDF disposal was assumed to be at a new facility, as there is no available capacity at existing facilities. CDFs in the Fox River were assumed to be located in nearshore areas. CDF construction would include sheetpile walls and riprap protection, and placement of a clean soil cap over the CDF when filled to capacity.

Dredge and HTTD includes thermally treating the sediment and proper disposal. Detailed evaluation of the relative merits of treatment levels versus disposal is reserved for the feasibility study. For example, HTTD treatment could be applied to a level so that the sediment is clean enough for beneficial reuse, such as placement as fill in construction or roadbed areas.

In-Situ Capping covers the target sediment with a cap consisting of 20 inches of sand and 12 inches of stone to provide erosion protection. A minimum river depth of 9 feet was required for capping, and if not available in the target area, dredging to either meet the depth requirement or as an alternative to capping was used in the cost estimate.

Restoration of the river bottom may involve placement of habitat-enhancing materials, adding cover material, or allowing natural processes to cover the dredged areas. The cost of aquatic habitat restoration is not included in these estimates, but restoration is an appropriate addition to this project under other authorizations such as Section 1135 of WDRA 1986, Section 204 of WDRA 1992, and Section 206 of WDRA 1996.

The re-drafting of the WDNR draft RI/FS was ongoing at the time of preparation of this 905(b) report, so the alternatives evaluated, and the cost estimates and assumptions associated with the various alternatives in the final FS published by the WDNR may vary from those represented here.

These general remedial alternatives are developed for each reach of the Fox River in the WDNR draft RI/FS, unless the general remedial alternative is not practicable for the reach. The wealth of information in the WDNR draft RI/FS is summarized here using ranges of costs from the lowest cost (highest action level, remove or contain contaminated sediments to a SWAC of 250 ppb) to the highest cost (lowest action level, remove or contain all contaminated sediments above 250 ppb) for the array of alternatives. A summary of the alternative plans and their ecological and social impacts for all reaches of the Fox River is presented in Table 2 on the next page. Sediment remediation on alternatives for Green Bay are being developed by the WDNR for their revised FS and will be available for use in preparing the Corps' feasibility study.

Table 2. Fox River and Green Bay 905(b) Alternatives Comparison Summary

Reach/Zone	Remedial Action	Cost Range (\$ millions)	Sediment Removal Range (CY)	Mass of PCBs Removal Range (lbs)	Capping Range (million sq. ft.)	Benefits		Other Considerations		
						Estimated Years to Ecological Recovery	Public Perception of Residual Risks	Dredging 312(a) Savings	Land Use	Social
Fox River										
Little Lake Butte des Morts	No Action	NA	0	0	0	100	High	None	No land use changes	Use restrictions due to continued risks.
	Dredge/Cap	52 – 94	63,000 – 1,563,000	560 – 3,400	6	17 – 44	Low to moderate	None	Site new landfill or CDF	Likely public opposition to new disposal sites. Reduced risks and accelerated recovery.
Appleton to Little Rapids	No Action	NA	0	0	0	37	Moderate	None	No land use changes	Use restrictions due to continued risks.
	Dredge/Cap	24	338,000	660	0	10	Low	None	—	Reduced risks and accelerated recovery.
Little Rapids to De Pere	No Action	NA	0	0	0	100	High	None	No land use changes	Use restrictions due to continued risks.
	Dredge/Cap	22 – 114	0 – 1,188,000	0 – 3,100	8 to 12	10 – 61	Low to moderate	None	Site new landfill or CDF	Likely public opposition to new disposal sites. Reduced risks and accelerated recovery.
De Pere to Green Bay	No Action	NA	0	0	0	100	High	None	No land use changes	Use restrictions due to continued risks.
	Dredge/Cap	46 – 490	250,000 – 5,440,000	3,100 – 48,000	6	19 – 100	Low to moderate	Moderate	Site new landfill or CDF	Likely public opposition to new disposal sites. Reduced risks and accelerated recovery.
Green Bay	To be completed in the Feasibility Report									

h. Conclusions from the Preliminary Screening

The following conclusions can be made after reviewing the existing information concerning the problems, opportunities, and potential solutions associated with the Lower Fox River and Green Bay:

- 1) The Lower Fox River and portions of Green Bay have very highly contaminated sediments and degraded aquatic ecosystems.
- 2) The contaminated sediments appear to be a continued source of PCBs into the ecosystem and food chain.
- 3) After 30 years of “no action,” significant risks to the environment and to human health continue to exist and fish consumption advisories first issued in 1976 remain in effect today.
- 4) Opportunities exist to achieve significant ecosystem restoration benefits by various alternative remedial methods.
- 5) Depending on the location, quantity, and type of contamination in the sediments, some combination of dredging and capping appears to be cost-effective and socially acceptable and would provide sufficient remediation to enable ecosystems restoration benefits to justify the costs.
- 6) Additional information and investigation is needed before any specific alternative could be properly evaluated and potentially implemented.
- 7) Significant interest has been expressed by local, State, and Federal entities in the ecological restoration of the Fox River and Green Bay. The Wisconsin Department of Natural Resources has expressed interest in being the lead non-Federal entity in the development of a solution.

6. Federal Interest

Section 312(b) of the Water Resources Development Act (WRDA) of 1990, as amended by Section 203 of WRDA 1996, allows for removal and remediation of contaminated sediments from the navigable waters of the United States for the purposes of environmental enhancement (restoration) and water quality improvement. WRDA 1990 gave priority for work in five areas, which includes the Lower Fox River, Wisconsin. The State of Wisconsin, through the WDNR, has requested involvement by the Federal Government for assistance in cleanup for environmental enhancement. Furthermore, the WDNR has indicated its willingness to be the non-Federal cost-sharing sponsor for the project (Exhibit 1).

The difference between “with project” and “without project” environmental benefits presented above clearly shows justification for a Federal involvement in cleanup efforts. Reduction in PCB levels that are adversely affecting fish and wildlife is consistent with current Federal program and budget priorities.

Under Federal and state law, responsibility for cleanup of the contaminants rests with the PRPs and Federal Government involvement should not be used to relieve them of this responsibility. However, since participation in cleanup efforts by the Federal Government under the Section 312(b) authority is shown to be justified, there are several possible approaches for using this authority as part of the overall comprehensive restoration plan being developed by others. The WDNR's final RI/FS will recommend a level of PCB concentration cleanup and will also present plans with various measures to achieve that action level of cleanup. This plan will then form the basis of negotiations with the PRPs for the ultimate implementation of restoration measures. Using the Section 312(b) authority, the following and other similar approaches should be investigated in the Corps feasibility study for participation in the ultimate comprehensive plan for restoration of the Lower Fox River and Green Bay:

- Cleanup of selected "hot spots," especially if the selected RI/FS plan is to remove sediments by reaches using the Surface Weighted Average Concentration (SWAC) method of measurement.
- Cleanup to lower levels of PCB concentrations to speed ecosystem recovery and realize quicker environmental benefits.
- Target efforts in selected river reaches/zones of Green Bay for that percentage of the overall cleanup that will attribute the "cream" of the benefits to ecosystem restoration.
- Target cleanup efforts for selected affected wildlife species of highest Federal interest.
- Target cleanup efforts that benefit wildlife species of highest significance and importance to Tribal interests.

There is also a Federal interest in other related outputs that should be addressed in the feasibility report for the study area. Opportunities exist for ecosystem restoration using Sections 1135, 204, and 206 under the Corps Continuing Authorities Program. Also, since the Corps performs navigation maintenance dredging in the study area, the feasibility study should assess benefits under Section 312(a) of WRDA '90 as amended. This is especially the case for the De Pere to Green Bay reach of the Fox River because the navigation channel extends to the Fort James turning basin, about 3.4 miles upstream from the mouth of the Fox River.

7. Preliminary Financial Analysis

As the non-federal sponsor for the feasibility phase of the project, the WDNR will be required to provide 50 percent of the cost of the feasibility phase. The WDNR is also aware of its cost-sharing obligations for the construction phase, should the project be implemented. A letter of intent from the WDNR stating its willingness to pursue the feasibility study and to share in its cost, and an understanding of the cost sharing that is required for project construction is provided as Exhibit 1. In the event that the feasibility study is

not authorized and funded to coincide with continued development of cleanup efforts by the sponsor, limited interim cost-shared assistance can be pursued under Section 401 of WRDA 1990. Section 401 allows the Corps to provide 50/50 cost-shared technical, planning, and engineering assistance to local governments in the development and implementation of remedial action plans for AOCs in the Great Lakes under the GLWQA of 1978.

8. Assumptions and Exceptions

a. Feasibility Phase Assumptions

The information being developed by the WDNR and USEPA as a part of the RI/FS analysis of the Lower Fox River and Green Bay is assumed to be available for use in the Feasibility Phase of the Environmental Dredging analysis. The initiation of the Feasibility Phase of the Environmental Dredging analysis is assumed to be dependent on the completion schedule of the RI/FS. The goal will be to eliminate duplication of analysis and data collection between the RI/FS and the Feasibility Phase of the Environmental Dredging analysis. The coordination being conducted and the conclusions being reached as a part of the RI/FS will be incorporated to the maximum extent possible in the Feasibility Phase of the Environmental Dredging analysis.

b. Streamlining Initiatives

The Feasibility Phase schedule is based on completion of the RI/FS in 2000. The WDNR has expressed a desire to complete the Feasibility Phase as soon as possible, with a goal of 18 to 20 months. Close coordination with the next steps of the WDNR RI/FS will be required to conduct the Feasibility Phase in a timely basis. This close coordination with the WDNR and the RI/FS work will be a focus of the Feasibility Phase.

9. Feasibility Phase Milestones

The following table lists the proposed milestones and schedule for the feasibility study.

Milestone	Description	Duration (mo)	Cumulative (mo)
Milestone F1	Initiate Study	0	0
Milestone F2	Public Workshop/Scoping	3	3
Milestone F3	Feasibility Scoping Meeting	6	9
Milestone F4	Alternative Review Conference	8	17
Milestone F4A	Alternative Formulation Briefing	6	23
Milestone F5	Draft Feasibility Report	6	29

Milestone F6	Final Public Meeting	1	30
Milestone F7	Feasibility Review Conference	1	31
Milestone F8	Final Report to Division Office	4	35
Milestone F9	DE's Public Notice	1	36
—	Project Approval	6	42

10. Feasibility Phase Cost Estimate

The following table lists the breakdown of studies expected during the feasibility phase of the project.

WBS#	Description	Cost
JAA00	Feas. – Surveys and Mapping except Real Estate	\$ 26,000
JAB00	Feas. – Hydrology and Hydraulics Studies/Reports	\$ 31,000
JAC00	Feas. – Geotechnical Studies/Report	\$ 21,000
JAEO0	Feas. – Engineering & Design Reports/Documents	\$ 360,000
JB000	Feas. – Socioeconomic Studies	\$ 65,000
JC000	Feas. – Real Estate Analysis/Report	\$ 49,000
JD000	Feas. – Environmental Studies/Report (Except USF & WL)	\$ 262,000
JE000	Feas. – Fish and Wildlife Coordination Act Report	\$ 43,000
JF000	Feas. – HTRW Studies/Report	\$ 32,000
JG000	Feas. – Cultural Resources Studies/Report	\$ 100,000
JH000	Feas. – Cost Estimates	\$ 41,000
JI000	Feas. – Public Involvement Documents	\$ 192,000
JJ000	Feas. – Plan Formulation and Evaluation	\$ 90,000
JK000	Feas. – Draft Report Documentation	\$ 100,000
JL000	Feas. – Final Report Documentation	\$ 55,000
JM000	Feas. – Washington Level Report Approval (Review Support)	\$ 56,000
JP000	Feas. – Management Documents (PPMD)	\$ 64,000
Q0000	PED Cost Sharing Agreement	\$ 13,000
Total		\$1,600,000

11. Views of Other Resource Agencies

On July 11, 1997, the Wisconsin Department of Natural Resources (WDNR), the U.S. Department of the Interior through its representative the U.S. Fish and Wildlife Service (USFWS), the Menominee Indian

Tribe of Wisconsin (MITW), the Onedia Tribe of Wisconsin (OTIW), the U.S. Environmental Protection Agency, and the U.S. Department of Commerce through its representative the National Oceanic and Atmospheric Administration (NOAA) entered into an agreement regarding the restoration of the Lower Fox River, Green Bay, and Lake Michigan environment. The parties agreed to coordinate their efforts to the extent consistent with their respective responsibilities, to address the release or threat of release of hazardous substances and injury to natural resources in the study area. The parties also acknowledged that based on then-current information, the removal of PCB-contaminated sediments in the Lower Fox River was expected to be the principal, but not exclusive, action undertaken to achieve restoration and rehabilitation of the injured natural resources and the services those resources provide in the affected area.

The USFWS, the NOAA, the MITW, the OTIW, the Michigan Attorney General, and the Little Traverse Bay Bands of Odawa Indians (collectively referred to as natural resource “Co-trustees”) have conducted an assessment of natural resource damages (NRDA) resulting from releases of PCBs to the study area ecosystem. These agencies are referred to as natural resource “Co-trustees” because they have agreed to work together to perform a single, comprehensive, joint natural resource damage assessment. The WDNR, also a natural resource trustee, declined a 1993 invitation to conduct a joint NRDA and entered into an agreement in 1997 to conduct a separate assessment led by the Fox River Group (FRG) of paper mills. However, in 2000 the WDNR entered a joint assessment plan addendum with the Co-trustees designed to merge compatible parts of the FRG-led NRDA with the Co-trustees’ NRDA, and WDNR subsequently has endorsed parts of the Co-trustees’ NRDA. The Co-trustees have also invited other state and tribal agencies in Michigan to join the Fox River and Green Bay NRDA because much of Green Bay is in Michigan waters, Fox River PCBs contaminate natural resources that routinely cross between Wisconsin and Michigan, and many opportunities for environmental restoration in and around Green Bay are in Michigan. The objective of the NRDA process is to compensate the public, through environmental restoration, for losses to natural resources that have been caused by releases of PCBs into the environment. Through a series of studies and reports, the most recent being the October 2000 Restoration and Compensation Determination Plan (RCDP), the Co-trustees present their planned approach for restoring injured natural resources. The final RCDP plan is dependent on the results of the WDNR’s RI/FS process because the potential for restoration and the nature and extent of future damages will depend on the extent of PCB cleanup undertaken by the response agencies. The RCDP presents a range of total damage restoration costs from \$176M to \$333M depending on the level of PCB cleanup effort. Costs were based on damages in the past and the cost of various restoration measures to restore present and future damages.

12. Potential Issues Affecting Initiation of Feasibility Phase

The status of the RI/FS being conducted by the WDNR and the USEPA could affect the initiation of the feasibility phase of the environmental dredging analysis for the Lower Fox River and Green Bay. The RI/FS process is very controversial and the views of the Federal, state and local resource agencies concerning the relationship between the RI/FS and the feasibility phase of the environmental dredging analysis could result in delays to the starting of the feasibility phase and to reaching agreement on the studies to be accomplished in the feasibility phase.

13. Project Area Maps and Exhibits

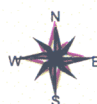
Maps of the study area and exhibits are provided as Attachment 1. They include:

- Figure 1. Location Map, Lower Fox River and Green Bay, Wisconsin
- Figure 2. Reaches of the Lower Fox River, Wisconsin
- Exhibit 1. Letter of Intent from WDNR

14. Recommendations

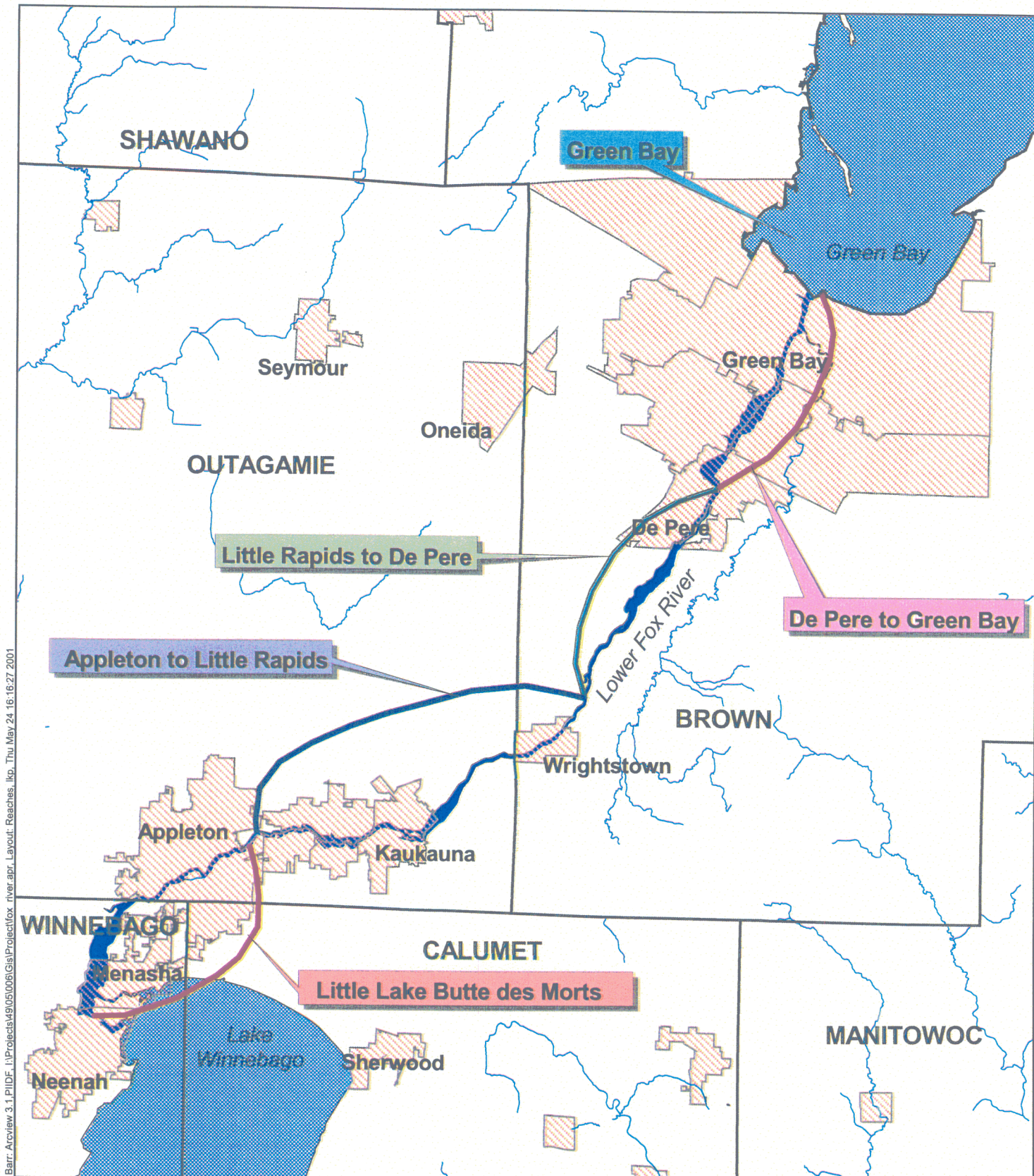
The results of this 905(b) analysis indicate that further Federal participation in detailed studies to determine if Federal assistance in implementing environmental restoration measures via Section 312(b) in the Lower Fox River, Wisconsin and Green Bay, Wisconsin and Michigan, is warranted. I recommend that the Detroit District proceed with the negotiation of a Feasibility Cost Sharing Agreement and detailed feasibility studies on a prospective environmental restoration project on the Lower Fox River and Green Bay.

for MAJ Scott D Jackson DPE
RICHARD J. POLO, JR.
LTC, EN
Commanding



10 0 10 20 30 Miles

Figure 1
LOCATION MAP
LOWER FOX RIVER
AND GREEN BAY
Wisconsin



Barr: Arcview 3.1.PIDF: I:\Projects\4905006\GIS\Project\Fox_river.apr Layout: Reaches, lrp, Thu May 24 16:16:27 2001

LEGEND

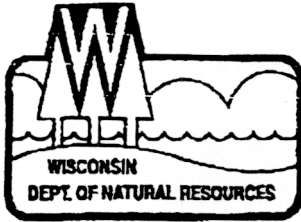
- Fox River
- Municipal Boundaries
- County Boundary
- Lakes
- Rivers



2 0 2 4 6 8 Miles

Figure 2

REACHES OF THE
LOWER FOX RIVER
Wisconsin



State of Wisconsin | DEPARTMENT OF NATURAL RESOURCES

Scott McCallum, Governor
Darrell Bazzell, Secretary

101 S. Webster St.
Box 7921
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June 29, 2001

District Engineer
U.S. Army Corps of Engineers - Detroit District
Attn.: Planning Branch
PO Box 1027
Detroit, MI 48231-1027


Dear Sir:

We have reviewed the draft Reconnaissance Study for the Lower Fox River that were developed by the United States Army Corps of Engineers (USACE) pursuant to Section 905(b) of the Water Resources Development Act of 1986, as amended. With this letter, the State of Wisconsin affirms our support for the development of the USACE feasibility study and agrees to enter into negotiation with the USACE as potential study partners concerning feasibility level studies for these water bodies and agreements related to the sponsor's share of costs. These negotiations will be to develop a project management plan for the development of that study.

It is our understanding the either the State of Wisconsin or the USACE may choose to discontinue the project development process at any time before entering into an agreement to implement the reconnaissance study or feasibility study recommendations.

If you have any questions, please contact Mr. Bruce Baker, Deputy Administrator of the Department of Natural Resources Water Division remediation program at 608/266-1902 (bakerb@dnr.state.wi.us).

Sincerely,


Darrell Bazzell
Secretary

cc: Bruce Baker - AD/5

